Although there was no significant difference of lipid quantity among primary rotifer cultures in both cases of secondary culture, total n-3 HUFA quantity from both continuous culture populations was higher than that from batch culture population 1 and 48 hour after inoculation. When the enrichment was performed with *N. oculata*, rotifer populations from two tanks of continuous culture and the batch culture tank 24 hour after inoculation contained higher quantity of ARA and EPA than those from two other tanks of batch culture. When the enrichment was performed with enrichment diet, populations from two tanks of continuous culture and the batch culture tank 24 hour after inoculation contained higher quantity of ARA, EPA and DHA than those from two other tanks of batch culture.

JSPS Core University Program between the University of Philippines, Visayas, Philippines and Faculty of Fisheries, Kagoshima University, Japan. Seminar on the management of inshore environment and utilization of fisheries resources.

The Commercially Important Seashells in Panay, Philippines

Liberato V. Laureta[1], Fernand Fagutao[1] and Hiroshi Fushimi[2]

[1] Institute of Aquaculture College of Fisheries and Ocean Sciences University of the Philippines in the Visayas Miag-ao, Iloilo 5023 Philippines

[2] Laboratory of Aquaculture and Stock Enhancement Department of Marine Biotechnology Fukuyama University Ohama, Innoshima, Hiroshima 722-2101 Japan

Many seashells abound in the coastal waters of Panay Island south of the Philippines. Most of these, whether in big quantity or not are sources of livelihood, since they are traded for money for human consumption, as materials for the button and shellcraft industries, as food for aquaculture species, and for keepsake or direct home ornaments.

In 2002-2004 survey of the coastal waters of the four provinces comprising the Panay, 137 shells were found to have commercial values. Of these, 85 were bivalves that belong to 25 Families, and 52 gastropods in 22 Families. There were 75 bivalves used for human consumption, three of these (oysters, *Crassostrea iredalei*, *C. gigas* and mussel *Perna viridis*) are cultured extensively in protected lagoons, while the rest are either gleaned or dived with or without compressor in shallow to deep waters. The angelwing *Pholas orientalis* and *Barnea manilensis*; yellow mangrove shell, *Polymesoda expansa*; tumid venus, *Gafrarium tumidum*;, nylon shells, *Paphia undulata*; meretrix venus, *Meretrix meretrix*; the ark shells, *Anadara inaequivalvis*, *A. granosa* and *A. antiquata*; pen shells, *Pinna bicolor*, and *Atrina vexillum*; scallops like *Amusium peluronectes*, *Chlamys senatoria* and *Annachlamys macassarensis*; spiny oysters like *Spondylus squamosus* and *S. aurantius*; the lucine clams like *Anodontia edentula*, *Eamesiella corrugata* and *Codakia tigerina* and many more are those typically dived or gleaned bivalved shells. For gastropods, 30 species are considered fit for human consumption. Exploited either through handpicking, gleaning or diving, the following species are popularly seen in the market or peddled in the community; the telescope snail, *Telescopium telescopium*; the abalone, *Haliotis asinina*, the murex shell, *Hexaplex cichoreum*; conchs like the *Strombus canarium*, *S. luhuanus*. *S. labiatus* and *Lambis lambis*, and many more.

The gastropods belonging to the families Cypraeidae, Strombidae, Cerithidae, Conidae, Columbellidae, Fasciolaridae, Neritidae, Naticidae, Turbinidae, Volutidae, Muricidae and Trochidae, are usually used in the shellcraft industries. The shells of the bivalve and gastropod species used as food, are also used for this purpose, like those belonging to the families Veneridae, Cardiidae, Spondylidae, Pectinidae, Arcidae, Glycymeridae, Pteriidae, and Haliotidae. But the bivalve species *Placuna placenta* is the most popular material for the production of shellcraft products like place mats, chandeliers, lampshades, glass coasters, lanterns and others.

For the button industry, shells with nacreous materials like those belonging to the bivalve family Pteriidae (*Pinctada maxima, P. margaritifera, Pteria penguin*) and gastropods family Trochidae (*Trochis niloticus, T. maculatus*) are preferred. Sold for home decors are gastropod species like *Cassis cornuta* and *Melo broderipii.*

Among the four provinces in Panay, Iloilo (120 species: 72 bivalves; 48 gastropods) was found to have the highest number of commercially important shells. Capiz has 66 species (53 bivalves; 13 gastropods); Antique with 64 species (39 bivalves; 25 gastropods); and Aklan has 64 species also (39 bivalves; 25 gastropods).

JSPS Core University Program between the University of Philippines, Visayas, Philippines and Faculty of Fisheries, Kagoshima University, Japan. Seminar on the management of inshore environment and utilization of fisheries resources.

A case study of present status of coastal resources and fisheries communities in Philippines

Hisashi Kurokura, Jon Parmos Altamirano, Naomi Horita[1] and Hiroshi Fushimi[2]

[1] Graduate School ofAgricultural and Life Sciences, The University of Tokyo
[2] Faculty of Life Science and Biotechnology, Fukuyama University

Batan Estuary, located in the Northeastern coast of Panay Island in central Philippines is a 2,640 ha semi-enclosed water body and river system supporting some 10,000 fishing households in three municipalities (Altavas, Batan, and New Washington) who are almost solely dependent on estuarine fisheries. Reports show that this was once a very productive fishing ground but at present, people claim of degrading environment and resources. Since there are very few studies and no current data to support this claim, interview surveys and actual field measurements were conducted in order to clarify present status of the estuary.

Interview surveys were conducted among 105 local fishers to determine their own perception of the conditions of the estuary based on personal experiences. Responses show decrease in daily catch of fish and shrimps from about 24 $kg \cdot d^{-1}$ in 1970, 10 $kg \cdot d^{-1}$ in 1980, and 5 $kg \cdot d^{-1}$ in 2000. Decades ago, the high-priced *Penaues monodon* (tiger shrimp) are abundant in the wild, but the lower-priced *Metapenaeus* ensis (greasyback shrimp) dominated the catch at present with very few instances of *P. monodon.* Ingles et al. in 1991 noted 426+ stationary fishing gears in the Batan Estuary while in 2000, Babaran et al. mapped 2,097 gears (including inner creeks). In the current study, GPS survey was conducted to map the present distribution of gears in the whole estuary revealing 1,897